

This is a sample of the typical construction surveying requirements for a City of Las Vegas capital improvement project. Surveys performed for any particular project should adhere **ONLY to the specific language included within that project's contract documents.*

ADD THE FOLLOWING SECTION TO DIVISION II – CONSTRUCTION DETAILS

SECTION 622 – CONSTRUCTION SURVEYING BY THE CONTRACTOR

DESCRIPTION

622.01.01 GENERAL

- A. The Contractor shall, under supervision of a Professional Land Surveyor, registered in the state of Nevada, furnish and set construction stakes establishing locations, lines, and slope stakes for roadway, storm drain, drainage structures, sewer, laterals, and for all other improvements for project necessary to ensure conformance of work to lines, elevations, locations, and grades as shown on the Plans and in these Special Provisions. Any horizontal or vertical discrepancies shall be reported to Engineer prior to commencement of construction. Any revisions or changes approved by Engineer that affect lines, grades, elevations or locations of any improvement shall be indicated on As-Built (Record) Drawings.
- B. If necessary, the Contractor shall also perform and provide to the Engineer those items described in subsection 203.04.01 of the USS. Any revisions or changes approved by the Engineer that affect the lines, grades, elevations or locations of any improvement shall be indicated on the As-Built (Record) Drawings.
- C. Contractor shall preserve property line and corner survey points. If their destruction is determined by Engineer to be unavoidable, and their replacement is not called for on the plans, Owner shall replace or pay for their replacement under this contract as determined by Engineer. Markers that are disturbed or destroyed by Contractor's operations without prior approval by the Engineer shall be replaced by Contractor at no additional cost to the Owner. Replacement shall be done only by a Nevada Professional Land Surveyor and in accordance with the USS. A record-of-survey for replacement of permanent survey monuments shall be submitted to Engineer for approval.
- D. When a permanent survey marker and/or monument is located within the construction area of any roadway, storm drain, drainage structures, sewer line or channel improvement, the Contractor shall adjust the cover or replace the monument as noted on the plans. The cost of replacement or adjustment of said monuments shall be included in the lump sum bid for Construction Survey. If monuments are to be installed as part of the work, they shall be placed in accordance with the USD numbers 239 through 243 and Section 621 of the USS.
- E. It is the intent for all monumentation called for within the Unified Development Code Appendix D to be placed within the project limits upon completion of the project regardless of the existence or non-existence of monumentation prior to construction. A record-of-survey for memorializing all set monuments shall be submitted to Engineer for approval.

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MATERIALS

622.02.01 BLANK

CONSTRUCTION

622.03.01 GENERAL

- A. Prior to all work in this section, the Contractor shall carefully inspect all installed work and verify that all such work is complete to a point where this installation may properly commence.
- B. The Contractor shall verify that all work can be installed in accordance with all pertinent codes and regulations, Contract Drawings and referenced standards.
- C. The Contractor shall verify that there are no conflicts with existing utilities prior to the start of work.
- D. In event of a discrepancy, the Contractor shall immediately notify the Engineer in writing.
- E. Installation of work in areas of discrepancy shall not proceed until all such discrepancies have been fully resolved.
- F. After stakes and marks have been set, it shall be the responsibility of the Contractor to protect the stakes and marks. Should any of the stakes or marks be destroyed or disturbed by the Contractor's operations or otherwise, the costs of replacing said stakes or marks shall be paid by the Contractor.
- G. The Engineer, at his discretion, may periodically have survey work performed to verify conformance to the construction plans. Any nonconformity found to be the fault of the Contractor, or the Professional Land Surveyor, shall be corrected at no additional cost to the Owner.
- H. Upon completion of the project and as a condition for final payment authorization, the Contractor shall furnish to the Engineer a Record of Survey/monument tie map and a certification attested to by the Professional Land Surveyor that the work performed for this contract has been constructed to the lines and grades as described in the As-built (Record) Drawings. When requested, the Contractor shall also provide the Engineer with copies of all field notes, computations, and other related work performed by the Professional Land Surveyor.

622.03.02 FINAL ACCURACY

- A. No tolerance will be allowed for any Pedestrian Pathway or sidewalk identified on the plans to exceed a 2.00% max cross slope. If final slope in these situations is above 2.00%,

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then sidewalk shall be removed and replaced at the expense of the contractor in accordance with USS Section 105.12.

- B. Surface Drainage Structures (including all concrete or asphalt gutters and drains) shall be installed within 0.05 feet horizontally and 0.05 feet vertically from the location taken from the project plans, and shall not vary more than 10 percent of the gradient shown on the plans.
- C. Sanitary and Storm Drainage Sewer Systems shall be installed within 0.05 feet horizontally and 0.05 feet vertically of the exact location taken from the project plans. In addition, the gradient of any 10-foot section of pipe shall not vary by more than 10 percent of the gradient shown the project plans
- D. Field verification surveys may be conducted by the city of Las Vegas at any given time during construction progress to ensure compliance with positional accuracy requirements per NAC 625, the contract documents, and this special provision.

622.03.03 INSTALLED/EXPOSED UTILITY SURVEYING

- A. All measurements are to be made by the Surveyor who will be certifying the project as constructed.
- B. The contractor is responsible for coordinating with the Surveyor during construction and shall provide access to all underground sanitary sewer, storm drain, and reuse water facilities prior to being buried; allowing accurate horizontal and vertical measurements to be acquired by the Surveyor. In the event of any discrepancies identified by CLV and at no cost to CLV, the Contractor shall verify the location and measurements of any buried utilities.
- C. After construction of the approved plans and before backfilling, survey shall be conducted indicating the size, horizontal and vertical location, and configuration of all underground sanitary sewer, storm drain, and reuse water facilities constructed with this project. Utility final location information shall be described by coordinates which shall be based on the official horizontal and vertical control networks of the City of Las Vegas and be certified by a Nevada professional land surveyor to have positional certainties within +/- 0.3-ft.
- D. Survey measurements for all underground sanitary sewer, storm drain, and reuse water facilities constructed during the course of construction including but not limited to pipes, manholes, drop inlets, boxes, vaults and appurtenances shall be located in their entirety within public right-of-way or public utility easements. Measurements shall be taken at a minimum of 100-ft intervals, at all exposed angle points, deflections of the utility exceeding +/- 0.5-ft, at all points that enter/exit the public right-of-way or public utility easement, and sufficient measurements to accurately define curving layout.

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- E. Potholes performed by the contractor prior to or during construction shall be surveyed indicating the size, location, burial depth, and configuration of the utility. Pothole location information shall be tied to the official horizontal and vertical control networks of the City of Las Vegas and be certified by a Nevada professional land surveyor.
- F. Utility final location information shall be submitted on paper and in electronic form, on a form specified by the City Surveyor. Submittal requirements and examples are included in Appendix E.
- G. Interim and final survey progress reports shall be submitted to the Engineer certifying sufficient survey measurements have been performed prior to backfilling as required by this section on a monthly basis.

METHOD OF MEASUREMENT

622.04.01 MEASUREMENT

The quantity of CONSTRUCTION SURVEYING will be measured per lump sum.

BASIS OF PAYMENT

622.05.01 PAYMENT

The accepted quantity of CONSTRUCTION SURVEYING will be paid for at the contract unit price per lump sum and shall include all materials, equipment and labor, including, but not limited to, monuments, record of surveys, monumentation tie sheets, as-built drawings, utility final location information, property line markers, corner survey points, construction survey and all other incidentals necessary to complete this work as described herein.

Monthly payments will be made in an amount equal to the percent of total contract complete multiplied times the lump sum price bid for construction surveying minus previous Construction Surveying monthly payments.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
622.0001	CONSTRUCTION SURVEYING	LS

END OF SECTION 622